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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

HUNT, ERIC T

ART UNIT	PAPER NUMBER
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2152

DATE MAILED: 10/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

AD

Office Action Summary	Application No.	Applicant(s)	
	09/310,596	LISITSA ET AL.	
	Examiner	Art Unit	
	Eric T. Hunt	2152	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 12 May 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-81 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-81 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 9 and 19 recite the limitation "the above steps" in claim 1. There is insufficient antecedent basis for this limitation in the claim. For the purpose of examination the claim is interpreted to omit the reference to any previous steps.

3. Claims 6 and 7 recite the limitation "the farthest" in claim 1. There is insufficient antecedent basis for this limitation in the claim. For the purpose of examination the claim is interpreted to read "an upstream" and "an downstream".

4. Claims 2, 12, 22, 44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not apparent if the claimed invention is an independent apparatus implementing the method recited in the independent claim or if the method can be embodied within a computer readable medium.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 43-56 are rejected under 35.S.C. 101 because the claimed invention is inoperative and therefore lacks utility.

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7. Claims 43-56 recite a data structure, which does not provide functionality to obtain any type of recited utility. Additionally, no storage medium has been specified, e.g. embodiment on a computer readable medium. Further any assumed computer readable medium containing the data structure does not fall within one of the five categories of statutory subject matter, namely: new and useful process, machine, manufacture, composition, of matter, or any new and useful improvement thereof. The claims are directed towards a data structure that is non-statutory in nature. See MPEP 2106(IV)(B)(1).

Merely claiming nonfunctional descriptive material stored in a computer readable medium does not make it statutory. Such a result would exalt form over substance. See *In re Sarkar*, 588 F.2d 1330, 1333, 200, USPQ 132, 137 (CCPA 1978). “non” functional descriptive material” includes but is not limited to music, literary works, and a compilation or mere arrangement of data, i.e. data structure, such as the one claimed. Where certain types of descriptive material, such as music, literature, art, photographs, and mere arrangements or compilations of facts or data, are merely stored so as to be read or outputted by a computer without creating any functional interrelationship, either as part of the stored data or as part of the computing processes performed by the computer, then such descriptive material alone does not impart functionality either to the data as so structured, or to the computer. See MPEP 2106(IV)(B)(1)(B). The claims recite an intended use “for processing streaming data” in the preamble which is not evident in the claims. An interrelationship between the claimed data structure and any functional activity is absent in the claimed invention, resulting only in non-functional descriptive material. Therefore, claims 43-56 are rejected.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-3, 10, 21, 23-25, 27, 57-63, 67, 68, and 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,282,202 to Bernstein and further in view of U.S. Patent No. 5,079,770 to Scott.

10. Regarding claim 1, Bernstein teaches allocating composite frames **[Bernstein column 3, lines 24-28 & column 4, lines 49-53]** having predefined subframes **[Bernstein column 27, lines 37-44 allocating space into a predefined memory location];**

restructuring the data among at least some of the subframes **[Bernstein column 6, lines 46-48 & column 7, lines 2-5]**

transporting the streaming data **[Bernstein column 10, lines 55-57]**

Bernstein does not teach constructing a pipe as a connected group of multiple ones of the modules, at least one of the modules being a restructuring module; transporting the streaming data through different ones of the modules in the group in different ones of the subframes; or restructuring the data in the restructuring module.

However, in art related to electrical systems for transmitting and receiving data, Scott teaches a connected group of multiple ones of the modules **[Scott figure 1 transmitter and receiver module]** corresponding to a pipe, Transmitter 103 encodes and transmits data **[Scott column 5, lines 49-52]** corresponding to a restructuring module. Scott further teaches

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transporting the streaming data through different ones of the modules in the group [**Figure 1, Data Source, Transmitter, Receiver, and Data Sink**]. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Bernstein with the modules of Scott because modules perform or implement particular tasks.

11. Regarding claim 3, Bernstein and Scott teach the invention substantially as claimed as noted above. Bernstein and Scott further teach where the composite frame is a physical frame in a memory. [**Bernstein column 27, lines 37-44**]

12. Regarding claim 10, Bernstein and Scott teach the invention substantially as claimed as noted above. Bernstein and Scott further teach where transporting the streaming data includes issuing a control transaction to the restructuring module only when all of the subframes processed by that module become available [**Bernstein column 5, lines 47-50**].

13. Regarding claim 60, Bernstein and Scott teach the invention substantially as claimed as noted above. Bernstein and Scott further teach including a processor. [**Bernstein column 9, lines 65-67**]

14. Regarding claim 61, Bernstein and Scott teach the invention substantially as claimed as noted above. Bernstein and Scott further teach the processor implements one or more of the restructuring modules. [**Bernstein column 9, lines 65-67 & column 10, lines 1-2**]

15. Regarding claim 62, Bernstein and Scott teach the invention substantially as claimed as noted above. Bernstein and Scott further teach including an input/output system. [**Scott column 6, lines 33-38**]

16. Regarding claim 63, Bernstein and Scott teach the invention substantially as claimed as noted above. Bernstein and Scott further teach where the input/output system implements one or more of the modules. **[Scott column 6, lines 33-38].**

17. Regarding claim 24, Bernstein and Scott teach the invention substantially as claimed as noted above. Bernstein and Scott further teach collecting a constant-offset flag for each module. **[Bernstein column 31, lines 17-20 T-slot type profile table]**

18. Regarding claim 25, Bernstein and Scott teach the invention substantially as claimed as noted above. Bernstein and Scott further teach collecting an offset value for any module whose constant-flag is set. **[Bernstein column 31, lines 17-20 T-slot type profile table].**

19. Regarding claim 27, Bernstein and Scott teach the invention substantially as claimed as noted above. Bernstein and Scott further teach comprising specifying memory sizes for each of the subframes within the composite frame. **[Bernstein column 27, lines 37-44 allocating space into a predefined memory location];**

20. Claims 21-23 contain similar limitations corresponding to the method claimed in claims 1-3; therefore claims 21-23 are rejected under the same rationale.

21. Claim 2, 57-59, 67, 68, and 80 contains similar limitations corresponding method claimed in claim 1; therefore claims 57-59, 67, 68, and 80 are rejected under the same rationale.

22. Claim 68 contains similar limitations corresponding method claimed in claim 10; therefore claim 68 is rejected under the same rationale.

23. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,282,202 to Bernstein and U.S. Patent No. 5,079,770 to Scott as applied to claim 1 above, and further in view of U.S. Patent No. 6,334,175 to Chih.

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24. Regarding claim 4, Bernstein and Scott teach the invention substantially as claimed as noted above. Bernstein and Scott do not teach where the subframes are virtual frames defined in the same memory as the physical frame. However, in art related to allocating memory in digital signaling processing systems, Chih teaches a digital signal processor for determining allocation requirement data [**Chih column 5, lines 27-30**]. Chih further teaches that memory allocation data is determined on a per application basis [**Chih column 5, lines 39-41**]. Thus, digital signal processor of Chih anticipates the allocation of sub frames to the same memory as the physical frame. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Bernstein and Scott with the digital signal processor of Chih because processors perform or implement particular tasks.

25. Regarding claim 5, Bernstein, Scott, and Chih teach the invention substantially as claimed as noted above. Bernstein, Scott, and Chih further teach assigning an allocator for the composite frames to one of the modules in the pipe. [**Chih column 3, lines 32-40**].

26. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,282,202 to Bernstein, U.S. Patent No. 5,079,770 to Scott and U.S. Patent No. 6,334,175 to Chih as applied to claim 5 above, and further in view of U.S. Patent No. 6,405,237 to Khalidi.

27. Regarding claim 6, Bernstein, Scott, and Chih teach the invention substantially as claimed as noted above. Bernstein, Scott, and Chih further teach an upstream restructuring module in the pipe. [**Scott column 20, lines 26-28**]

Bernstein, Scott, and Chih do not teach where the allocator is assigned. However, in art related to data transfer among devices within a computer system, Khalidi teaches that each

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application program that uses vfbuf buffers is associated with the module responsible for memory allocation [**Khalidi column 8, lines 12-15**] corresponding to assigning an allocator to a module. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Bernstein, Ferriere, and Chih with the allocator assignment of Khalidi because the it results in savings in overhead.

28. Claim 7 contains similar limitations corresponding to the method claimed in claims 6; therefore claim 7 is rejected under the same rationale.

29. Claims 8, 9, 11, 12, 15-18, 26, 28, 30-38, 56, 64-66, 69-77, and 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,282,202 to Bernstein and U.S. Patent No. 5,079,770 to Scott as applied to claim 1 above, and further in view of U.S. Patent No. 6,353,450 to Deleeuw.

30. Regarding claim 8, Bernstein and Scott teach the invention substantially as claimed as noted above. Bernstein and Scott do not teach constructing a frame nesting tree specifying how the data is to be restructured in the restructuring module. However, in art related to providing input to a computer system, Deleeuw teaches creating a filter graph based filter behavior commands [**Deeleuw column 13, lines 8-11**]. Given the broadest reasonable interpretation of the term graph Deeleuw teaching corresponds to a nested tree. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Bernstein and Scott with the filter graph of Deeluw because filter graphs provide organization of modules in a streaming architecture.

31. Regarding claim 9, Bernstein and Scott teach the invention substantially as claimed as noted above. Bernstein and Scott further teaches further pipes including further modules in the

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computer [Scott column 6, lines 14-21]; Bernstein and Scott do not teach joining the pipes together into a graph. However, Deleeuw teaches created a graph [Deleeuw column 13, lines 8-11]. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Bernstein and Scott with the filter graphs of because filter graphs provide organization of modules in a streaming architecture.

32. Regarding claim 11, Bernstein, Scott and Deleeuw teach the invention substantially as claimed as noted above. Bernstein, Scott and Deleeuw further teach performing operations upon the subframes in any of the modules sourcing data to the restructuring module [Deleeuw column 13, lines 28-43];

after completion of the operations for all of the subframes sourcing data to the restructuring module, issuing a control transaction to the restructuring module [Bernstein column 5, lines 49-54 control frame sent upon termination of connection corresponding to the completion of operation];

performing operations upon the subframes sourced to the restructuring module in response to the control transaction [Bernstein column 5, lines 49-54 control frame sent upon requesting a connection corresponding he start of operations];

33. Regarding claim 15, Bernstein, Scott and Deleeuw teach the invention substantially as claimed as noted above. Bernstein, Scott and Deleeuw further teach constructing an offset table specifying the structure of the subframes within the composite frame. [Bernstein column 31, lines 17-20 T-slot type profile table]

34. Regarding claim 16, Bernstein, Scott and Deleeuw teach the invention substantially as claimed as noted above. Bernstein, Scott and Deleeuw further teach constructing a pipe control

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table specifying the structure of the modules in the pipe. The examiner takes OFFICIAL NOTICE that is obvious to construct a table to specify structure as noted in the rejection to claim.

35. Claims 17, 18, and 42 contain similar limitations corresponding constructing a table specifying structure as claimed in claim 16; therefore claims 17, 18, and 42 are rejected under the same rationale.

36. Regarding claim 28, Bernstein, Scott and Deleeuw teach the invention substantially as claimed as noted above. Bernstein, Scott and Deleeuw further teach a plurality of the restructuring modules are of a single type in a cascade in the pipe. **[Deleeuw column 12, lines 43-44 & 56-59]**

37. Regarding claim 30, Bernstein, Scott and Deleeuw teach the invention substantially as claimed as noted above. Bernstein, Scott and Deleeuw further teach where the plurality of cascaded modules are mixers, and where the allocator is assigned to a downstream one of the cascaded mixers. **[Deleeuw column 13, lines 35-38].**

38. Claim 31 contains similar limitations corresponding to the method claimed in claim 30; therefore claim 31 is rejected under the same rationale.

39. Claims 12, 32, 33, 34, 38, 69-71, 73, 76, 77, and 81 contain similar limitations corresponding to the method claimed in claim 11; therefore claims 12, 32, 33, 34, 38, 69-71, 73, 77, and 81 are rejected under the same rationale.

40. Regarding claim 35, Bernstein, Scott and Deleeuw teach the invention substantially as claimed as noted above. Bernstein, Scott and Deleeuw where further teach the source ones of the modules are those receiving data from outside the pipe. **[Deleeuw column 12, lines 43-47]**

41. Regarding claim 36, Bernstein, Scott and Deleeuw teach the invention substantially as claimed as noted above. Bernstein, Scott and Deleeuw further teach a plurality of the restructuring modules are mixers [**Deleeuw column13, lines 37-44**].

42. Regarding claim 37, Bernstein, Scott and Deleeuw teach the invention substantially as claimed as noted above. Bernstein, Scott and Deleeuw further teach where a plurality of the mixers are cascaded in the pipe [**Deleeuw column 12, lines 42-43 & column 13, lines 35-36**].

43. Claims 26, and 64-66 contain similar limitations corresponding specifying structure as claimed in claim 16; therefore claims 26, and 64-66 are rejected under the same rationale.

44. Claim 72 is a system corresponding to the method claimed in claim 35; therefore claim 72 is rejected under the same rationale.

45. Claim 74 and 75 are system claims corresponding to the method claimed in claim 36 and 37; therefore claim 74 and 75 are rejected under the same rationale.

46. Claims 78 and 79 are system claims corresponding to the method claimed in claim 61 and 63; therefore claims 78 and 79 are rejected under the same rationale.

47. Claims 13, 14, 39, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,282,202 to Bernstein, U.S. Patent No. 5,079,770 to Scott, and U.S. Patent No. 6,353,450 to Deleeuw as applied to claim 11 above, and further in view of U.S. Patent No. 4,841,526 to Wilson.

48. Regarding claim 13, Bernstein, Scott and Deleeuw teach the invention substantially as claimed as noted above. Bernstein, Scott and Deleeuw do not teach constructing a frame control table having an entry for each module in the pipe and a flag for each of the modules indicating whether a particular module has completed an operation upon the frame. However in art related

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to the field of data communication systems, Wilson teaches a frame control table which lists bit patterns for types of frames, i.e. commands or responses. **[Wilson column 17, lines 1-4]**. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Bernstein, Scott and Deleeuw with the frame control table of Wilson because frame control table allow appropriate processing of each frame by maintaining a record of frame status.

49. Regarding claim 14, Bernstein, Scott, Deleeuw, and Wilson teach the invention substantially as claimed as noted above. Bernstein, Scott, Deleeuw, and Wilson further teach setting one of the flags whenever a module has completed an operation upon a frame. **[Wilson column 18, lines 39-47 detects completion of communication and flags are set to indicate detected errors]**.

50. Claims 39 and 40 contain similar limitations corresponding to the method claimed in claim 13; therefore claims 39 and 40 are rejected under the same rationale.

51. Claims 19, 20, 41, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,282,202 to Bernstein, U.S. Patent No. 5,079,770 to Scott, and U.S. Patent No. 6,353,450 to Deleeuw as applied to claim 11 above, and further in view of U.S. Patent No. 6,212,568 to Miller.

52. Regarding claim 19, Bernstein, Scott and Deleeuw teach the invention substantially as claimed as noted above. Bernstein, Scott and Deleeuw do not teach a plurality of composite frames circulate within the pipe concurrently. However, in art related to managing and distributing real-time data, Miller teaches Frame time information regarding the time in which frames overlap **[Miller column 11, lines 12-14]**. Therefore it would have been obvious to one of

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ordinary skill in the art at the time the invention was made to combine the teachings of Bernstein, Scott and Deleeuw with the frame time information as taught by Miller because it provides searching and management of frames.

53. Claims 41 and 42 contain similar limitations corresponding method claimed in claim 19 and 16; therefore claims 41 and 42 are rejected under the same rationale.

54. Claim 20 contains similar limitations corresponding to constructing a table specifying structure as claimed in claim 16; therefore claim 20 is rejected under the same rationale.

55. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,282,202 to Bernstein, U.S. Patent No. 5,079,770 to Scott and U.S. Patent No. 6,334,175 to Chih as applied to claim 5 above, and further in view of U.S. Patent No. 6,353,450 to Deleeuw.

56. Claim 29 contains similar limitations corresponding to the method claimed in claim 4; therefore claims are rejected under the same rationale.

Conclusion


57. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric T. Hunt whose telephone number is 703-305-4868. The examiner can normally be reached on 7am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 703-305-4815. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

E.H.
September 27, 2002



LE HIEN LUU
PRIMARY EXAMINER